

Application No. 10/605,599  
Amdt. mailed February 28, 2006  
Attorney Docket No. 03-0414

### REMARKS

#### Affirmation of Election/Restrictions

The applicant hereby affirms the election made without traverse on November 23, 2005 during a telephone conversation by then-current representing attorney Thomas Donohue with the Examiner, to prosecute the invention I, which claims 1-14 and 15-22 read upon. Claims 23-27 are withdrawn from further consideration as being directed to a non-elected invention.

#### Amendment in the Specification

The specification, in particular, paragraph 0020, is amended to correct an inadvertent error, wherein the foam assembly is assigned the part number 22 instead of 24.

#### Amendment in the Claims

Claims 1, 11 and 15 have been amended to more particularly point and distinctly claim the subject matter which the applicant regards as the invention, support for which amendment may be found in the specification at, for example, in the last two lines of paragraph [0016].

Claims 3 and 17 are amended to correct a typographical error.

Claims 23-27 are withdrawn due to non-election as noted above.

#### **Claim Rejections – 35 USC § 102**

A. The Examiner has rejected claim 1 under 35 U.S.C. 102(b) as being anticipated by Moore (US 20030024934).

The Examiner recites “Moore discloses a cryogenic tank wall (20), a foam assembly (40) affixed to said tank wall (20), a first solid film bonded to outer surface (50) to

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provide a uniform outer bonding surface; and a thermal protection system (30) bonded to outer bonding surface.

This rejection is not well taken.

The relevant disclosure in Moore is found in paragraph 0032 and FIG. 3. An inner tank wall (20) is provided. A foam insulating material (40) is affixed to said tank wall (20). However, the first solid film bonded to outer surface of the foam cannot be positively identified in Moore and it is the applicant's reading that the solid film for improving bonding is entirely absent in Moore. Part 50 is a "fire resistant textile material" (lines 7-8 of paragraph 0032). Even though 50 can be a polyester film such as Mylar or Kevlar, there is no teaching or suggestion in Moore that 50 is used for bonding the foam to the thermal protection system. A fire resistant textile film cannot be assumed to provide adequate bonding. Furthermore, part 30 is not a thermal protection system. Moore teaches part 30 to be an outer secondary tank wall which is made of "carbon steel" (paragraph 0034). It is obvious that carbon steel is not semi-rigid and cannot provide any thermal protection due to its high thermal conductivity, as opposed to materials such as ceramic tiles.

It is the applicant's position that the Examiner's reading of Moore is not correct and when read correctly, the claimed invention is not anticipated by Moore.

The applicant therefore respectfully requests the withdrawal of claim rejection due to anticipation over Moore.

B. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosen *et al.* (US 6868981).

The Examiner recites that Rosen *et al.* teaches "a light weight cryogenic tank wall (12, 15) on which is bonded a honeycomb assembly (14) sandwiched between layers of foam (col. 3, lines 1-3), which act as a solid bonding layer, to which a thermal protection

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system is bonded (15, and 17).

The rejection is not well taken.

The tank wall 12 does not have any material, such as a honeycomb assembly or a foam, bonded on to it. Tank wall 12 is an inner spherical shell member and 15 is the inner skin of an outer spherical shell member. Existing over 12 and between 12 and 15 is a radial gap evacuated to high vacuum. Therefore, the following argument is presented while 15 is considered as the tank wall.

The relevant disclosure (col. 2, line 60 to col. 3, line 3) indicates that an inner skin 15 and an outer skin 17 are joined together with a low thermal conduction insulating material. The low thermal conduction insulating material should be expected to function similarly as the foam assembly taught by the present invention to reduce thermal conductivity. There is no teaching or suggestion in Rosen *et al.* of a solid film bonded to the outer layer of the foam assembly to provide a uniform outer bonding surface as claimed by the present invention, either functionally or structurally.

It is the applicant's position that the Examiner's reading of Rosen *et al.* is not supported by the reference and that the claimed invention is not anticipated by Rosen *et al.*

The applicant therefore respectfully requests the withdrawal of the claim rejection due to anticipation over Rosen *et al.*

C. Claims 1, 5-15 and 18-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Middleton *et al.* (US 3365897).

The Examiner recites that Middleton *et al.* teaches "a tank wall (19), foam assembly (23), film layers bonded to inner (29) and outer surface (33), and thermal protection (51) assembly bonded outside of those..."

The rejection is not merited.

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The foam assembly 23 taught in Middleton *et al.* is structurally different from the foam assembly of the present invention in that 23 is a cellular insulating layer having open cells defined by cell walls (col. 3, lines 48-50). The foam assembly 23 is also functionally different from the foam assembly in the present invention. "As the fuel tank 19 is filled with liquid hydrogen the sealed cells 25 of the cellular layer 23 are subjected to cryogenic temperatures and are cryo-voided by the solidification of air and/or other gases at cryogenic temperatures. These cells, thus, cryo-voided, provide the high thermal insulation effectiveness approaching that of vacuum insulation (col. 4 line 71 to col. 5, line 2). The foam assembly of the present invention does not have open cells therein and does not contain gas therein either. The foam assembly of the present invention also does not rely on the solidification of gases to provide insulation, either entirely or partially.

Furthermore, the outer film layer 33 taught in Middleton *et al.* is not even in contact with the thermal protection assembly (51), the two items being separated by a second cellular layer 39. The outer film layer 33 functions to seal the open cells of the first cellular insulating layer 23. There is no teaching or suggestion of a part that is structurally or functionally equivalent to the solid film bonded to the outer layer of the foam assembly to provide a uniform outer bonding surface as claimed by the present invention.

The applicant therefore respectfully requests the withdrawal of the claim rejection due to anticipation over Middleton *et al.*

The Examiner has rejected claims 2-4, 16, and 17 under 35 U.S.C. §103(a) as being unpatentable over Middleton *et al.* as applied to claim 1 above and further in view of Weiser *et al.* (US 6133330) and Merrill *et al.* (US 20040048049).

In formulating the rejection, the Examiner relies on Middleton *et al.* to teach the cryogenic tank made of multiple layers, Weiser *et al.* to teach the use of polyimides and

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Merrill *et al.* to teach the use of polyurethane.

As presented previously, it is the applicant's contention that Middleton *et al.* fails to teach the same multiple layer structure as claimed for the present invention. The inclusion of Weiser *et al.* and Merrill *et al.* fails to overcome this deficiency. The combination of the three references would not teach or suggest the claimed invention.

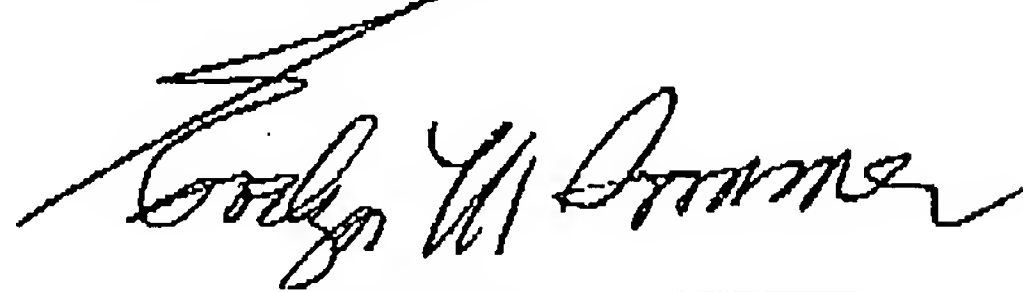
Therefore, the claim rejection based on obviousness should be withdrawn.

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**CONCLUSION**

In view of the above, it is respectfully requested that the Examiner's rejections be withdrawn and the claims indicated as allowable to the applicant.

Respectfully submitted,



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